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Attorney Docket No. AG-101RE

Honorable Commissioner of Patents
and Trademarks
Box Patent Application
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the reissue patent application of:

Inventor: GARY L. KELDERMAN

For: TRACK SYSTEM FOR VEHICLES

Enclosed are:

Eight pages of specification, claims and abstract
Two pages of additional claims
Inventor's Declaration for Reissue Application
Patent Owner's Declaration for Reissue Application
4 pages of drawings
Small Entity Declaration
Certified Copy of Title Report
Copy of letter, Assignment cover sheet & Assignment, and postcard.
Information Disclosure Citation with Patents.

Also enclosed is the below-signed attorney's check in the sum of $491.00 covering the basic filing fee. There are a total of 26 claims, including 7 independent claims (6 in the original patent). If the amount remitted is incorrect, please debit or credit Deposit Account No. 10-0270 with the difference.

Very truly yours,

Peter N. Jansson
Registration No.

Enclosures

EXPRESS MAIL # EM 197680173US
I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS EXPRESS MAIL IN AN ENVELOPE ADDRESSED TO: COMMISSIONER OF PATENTS AND TRADEMARKS, WASHINGTON, D.C. 20231, ON July 25 1997

Irene C. Boese

DATE: July 25 1997

US005452949A

United States Patent [19]

Kelderman

[11] **Patent Number: 5,452,949**

[45] **Date of Patent: Sep. 26, 1995**

[54] **TRACK SYSTEM FOR VEHICLES**

[76] Inventor: **Gary L. Kelderman**, 2674 Hwy. 92, Oskaloosa, Iowa 52577

[21] Appl. No.: **229,926**

[22] Filed: **Apr. 19, 1994**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 165,641, Dec. 13, 1993, abandoned.

[51] **Int. Cl.**[6] **B62D 55/14**; B62D 55/104

[52] **U.S. Cl.** **305/24**; 305/23; 305/29; 180/9.44

[58] **Field of Search** 305/15, 21, 23, 305/24, 29, 31, 32, 56, 10, 60; 180/9.1, 9.21, 9.26, 9.44

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Primary Examiner—Russell D. Stormer
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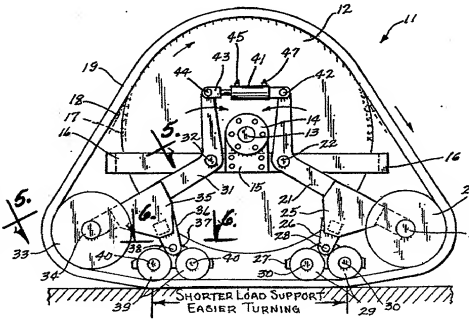
[57] **ABSTRACT**

A track suspension system for a vehicle having a frame and a continuous flexible track. A drive wheel is attached to the frame for engaging and driving the continuous flexible track. A leading idler arm is pivotally attached to the frame on each side thereof and a leading idler wheel is rotatably mounted for engagement with the track. A trailing idler arm is provided on each side of the vehicle and is pivotally attached to the frame and a trailing idler wheel engagement with the track is rotatably mounted to one end of each idler trailing arm. A leading mid-roller assembly engagement with the track is operably attached to the leading idler arm and a trailer mid-roller assembly is in engagement with the track and is attached to the trailing idler arm. A cushioning device interconnects the leading and trailer idler arms for providing shock absorbing function. A valve system is provided for releasing all of the pressure on the leading and trailing idler arms so that all of the weight of the tractor is on the mid-roller assembly, thereby facilitating easier turning. The valve system is also operable to put leading and trailing idler arms in either a cushioning mode for use in the fields or travel down the highway or into a non-cushioning mode for use in very soft fields.

16 Claims, 4 Drawing Sheets



BEST MODE FOR CARRYING OUT THE INVENTION

Referring now to the drawings wherein like reference numerals designate identical or corresponding parts throughout the several views, FIG. 1 shows an agricultural tractor (10) having the rubber track system (11) attached to the rear wheel assembly thereof and with the normal rubber tires removed therefrom. A drive wheel (12) is rotatably attached to the tractor (10) through an axle (13) to which it is rigidly affixed. The axle (13) is rotatably mounted by a bearing bearing (14) and is rotated in a conventional fashion through the tractor (10) by its engine and through a transmission which can vary the speeds and allow forward and reverse rotation. The bearing (14) is mounted by a bracket (15) to the frame (16) of the tractor (10).

The drive wheel (12) has a plurality of drive projections (17) disposed thereon which engage depressions (18) in the rubber track (19). The frame track (19) passes around the drive wheel (12) on each side of the tractor (10) as can readily be seen in FIG. 1.

A leading trail arm (21) is pivotally attached to the frame (16) at pivot pin (22) and a trailing swing arm (31) is pivotally attached by a pivot pin (32) to the frame (16). The leading swing arm (21) has an idler roller (23) rotatably attached thereto through bearing structure (24). Similarly, the trailing swing arm (33) is mourned mounted to an axle or bearing structure (34). Rigidly attached to the leading swing arm (21) is a bracket (25) having another member (26) also rigidly attached thereto. A leading trolley assembly (27) is pivotally attached through a pin (28) so that the trolley (27) can pivot as needed. A total of four mid-rollers (29) are rotatably attached to the trolley (27) on each side of the tractor (10). These trolleys (29) are rotatably mounted about a pin (30).

Similarly, on the trailing swing arm (31) is a bracket (35) having a member (36) attached thereto. A trolley assembly (37), which is identical to the trolley (27) of the leading swing arm, is pivotally attached through a pin (38). Mid-rollers (39) are rotatably attached by axles (40) to the trolley assembly (37).

The top of the leading swing arm (21) has a hydraulic cylinder (41) pivotally attached thereto at pin (42). Similarly, the other end of the hydraulic cylinder (41) is pivotally to the hydraulic cylinder clevis (43) by a pin (44). The hydraulic cylinder has a vent port (45) on the shaft side of piston (46). A hydraulic supply port (47) extends into the cylinder (41) on the other side of the piston (46) for reasons which will be explained below.

Referring now to FIG. 4, a schematic drawing is shown having a control system attached thereto for the hydraulic cylinders, of which there are two, one on each side of the right wheel (which are shown) and two which are on each side of the left assembly (11) (which are not shown in the schematic of FIG. 4). A pressure port (51) is shown going into a valve (52) which is controlled by computer (53). Also going into the valve (52) is a port (54) which leads to a sump (55).

A hydraulic line (56) leads from the valve (52) to a solenoid valve (57) and to an accumulator (58). A line (59) leads to the high pressure side and port (47) of each of the hydraulic cylinders (41) on the right side assembly (11) and also to both of the hydraulic cylinders (41) on the left side assembly (11).

A load sensor (60) is attached to only one of the hydraulic cylinders (41), although more sensors could be used on the other cylinders if desired. The one sensor (60) is adequate to sense the position of the leading and trailing idlers (23 and 33) based on the length that the hydraulic cylinder (41) has extended as shown in FIG. 2. The sensor (60) has a portion attached to the hydraulic cylinder barrel and has a shaft (61) extending therefrom which is attached to the clevis (43) by a member (62). Consequently, as the hydraulic cylinder (41) lengthens, so does the shaft (61) extend further from barrel portion (60) in which it reciprocates. Likewise when the cylinder (41) retracts, the shaft (61) will retract into the cylinder portion (60) of the load sensor.

The load sensor (60) sends its information back through a 12-volt line (63) to the computer (53). Another 12-volt line (64) leads from the computer (53) to the electrically actuated solenoid valve (57) which is spring biased to an open position but will move to a closed position thereof when the computer energizes the line (64) leading from the computer (53) to the solenoid (57).

A switch (66) in the cab (67) of the tractor (10) is of the three position type. It will send a signal through line (68) from the cab of the tractor to the computer (53) depending upon which one of three modes is desired to be used. When the switch (66) is placed in the mode 1 position, the computer (53) will open the valve (52) to allow the pressure from port (51) of the tractor hydraulic system to enter line (56) and at the same time, the solenoid (57) will remain open so that the hydraulic cylinders (41) are pressurized and consequently lengthened to the position shown in FIG. 2, which is the optimum position for the idler rollers (23) for highway travel and also for travel in farm fields during normal conditions. In this position there is full load support on the entire distance shown on the bottom of the robber rubber track as shown in FIG. 2.

In mode 1, as the lead idler wheel (23) encounters obstructions, it may be forced upwardly. This will cause the cylinder (41) to retract slightly to compensate for that upward movement because the pressure can backup into the accumulator (58). The accumulator would typically be a tank having hydraulic oil therein which is charged on the top thereof with nitrogen gas, which will essentially act as a spring to hold the pressure high in the accumulator, but which will accommodate and absorb shocks during those times when the leading roller (23) hits an obstruction, such as a rock or the like, in a field. It is of course understood that if the tractor (10) is put into a reverse gear, the leading and trailing arms, idlers, etc. will essentially reverse. In any event, for the purposes of this description, the leading idler arm and leading idler will be referred to as if it were moving in a forward direction, which it will be doing a high percentage of the time. After the obstruction has been traversed, the pressure in the hydraulic lines will essentially force the idler arms (21) and (31) and respective idler rollers (23 and 33) back to the position shown in FIG. 2, after the shock of hitting the obstruction has passed.

With the tractor in mode 1, it has been determined that while it is very desirable to have as much contact of the track with the ground or highway as possible, this becomes an impediment to turning the tractor when turning is needed. Consequently, when the user of the tractor (10) gets at the end of the row and wants to turn around to go in another direction, the switch (66) can be moved to mode 3 just for turning purposes only.

When the switch (66) is moved to the mode 3 turning mode, solenoid (57) remains open but valve (52) is moved to drain and relieve pressure in the hydraulic line (56) to the sump (55) of the tractor. This essentially relieves the pressure on the high pressure side of each of the hydraulic cylinders (41), which will allow the cylinders to shorten to the FIG. 3 position since they are vented to atmosphere on the other side of the piston. This puts all of the weight on the mid-roller assemblies (27 and 37) on each side of the tractor and shortens the amount of the rubber track (19) which engages the ground or the road. There is no shock absorbing being done in the mode 3 configuration shown in FIG. 3. Consequently, it is not desired to leave it in this mode any longer than is necessary to complete a turn. After the turning is accomplished, the switch (66) is moved back to the mode 1 position where high pressure is returned to line (56). Because solenoid (57) is open, all of the hydraulic cylinders (41) will be moved back to the somewhat extended position desired as shown in FIG. 2.

The load sensor (60) is essentially set for the optimum position shown in FIG. 2 and will tend to hold the hydraulic cylinders (41) in that pre-determined desired position shown in FIG. 2 assuming that the mode 1 position of the switch (66) is maintained. The only thing that will cause it to move is if cushioning is needed due to some irregular condition encountered by the idler pulleys (23 and 33) transmitted to the leading and trailer idler arms (21 and 31). It is noted that the mode 3, FIG. 3, position can be used for turning either in the field or on the highway.

Under very limited circumstances, the mode 2 position may be used. In the mode 2 position, the computer will energize the solenoid (57), thereby causing it to be closed. At the same time, it will completely close off the valve inlet line (51) so that hydraulic fluid from line (56) cannot move from line (51) to (56), nor can the pressure within (56) be in communication with line (54) and the sump of the tractor hydraulic system. By closing the line (56) entirely off and closing the solenoid valve (57), the cylinders (41) will be locked in the FIG. 2 position. Under these circumstances, there is no cushioning because the hydraulic cylinders are no longer in communication with the accumulator (58) and since hydraulic oil is essentially non-compressible. Mode 2 is used when the tractor is traversing very soft ground. The other time that mode 2 would be used would be when it is desired to change out some of the components of the system, such as the accumulator (58) or the hydraulic cylinders (41), or even if one of the hydraulic lines interconnecting the system needed to be replaced.

Referring now to another embodiment (111) shown in FIGS. 8–11, it can be seen that the rubber track (19) is being moved by a larger drive wheel (112) which extends downwardly between and below mid-rollers (129) on mid-roller assembly (120). Each of the mid-rollers (129) are rotatably attached to the subframe (127) by short axles (130) which do not extend completely across the track and thereby permit the drive wheel (112) to extend downwardly between the stop shaft members (130).

The subframe (127) on the mid-roller assembly (120) has an arm (126) rigidly attached to the subframe (127) and pivotally attached by pin (137) to bracket (135). The bracket (135) is rigidly attached to the trailing arm (31). Similarly, a bracket (125) rigidly attached to leading arm (21) is operably, pivotally attached to the other end of the subframe (127) by a link (126) which is pinned at the top thereof to member (127) and at the bottom thereof to the subframe

(127) by a pin (128). Further structures can be used instead of the link (126) which can allow some lost motion between the arm (21) and the subframe (127). Also, of course, this link structure (126) could be on both ends of the subframe (127) or on the trailing end instead of the leading end in order to permit the idler arms (23) and (33) to move to the position shown in FIG. 11 and between the position shown in FIGS. 8 and 11 as is needed for proper operation of the device. Otherwise, the apparatus shown in FIGS. 8–10 works exactly like the embodiment shown in FIGS. 1–7, with the same control system being utilized.

Accordingly, it will be appreciated that the preferred embodiment disclosed herein does indeed accomplish the aforementioned objects. Obviously many modifications and variations of the present invention are possible in light of the above teachings. For example, the hydraulic cylinder could be placed below the pivot pins (22 and 32) on the leading and trailing swing arms (21 and 31) instead of being up higher on extensions of the swing arm members where they are shown in FIGS. 2 and 3. It is therefore to be understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

I claim:

1. A track suspension apparatus for a vehicle having a frame, comprising:

a continuous flexible track;

a drive wheel operatively attached to said frame for engaging and driving said continuous flexible track;

a leading idler arm operatively pivotally attached to said frame;

a leading idler wheel in engagement with said track and rotatably mounted to one end of said leading idler arm;

a trailing idler arm operatively pivotally attached to said frame;

a trailing idler wheel in engagement with said track and rotatably mounted to one end of said trailing idler arm;

a mid-roller assembly in engagement with said track and operatively attached to one of said idler arms;

an interconnecting structure for holding said leading and trailing idler arms in a predetermined position; and

cushioning means associated with said interconnecting structure for providing a shock absorbing function when said leading and trailing idler wheels move with respect to each other due to pivoting of said idler arms when irregular surfaces are encountered by said track, said cushioning means comprising a fluid control device operably attached at one end thereof to one of said idler arms and operatively attached at the other end thereof to the other one of said idler arms.

2. The apparatus of claim 1 including accumulator means for permitting fluid to move out of said fluid control device and into said accumulator means when an obstruction is encountered by one of said idler wheels.

3. The apparatus of claim 2 including means for temporarily disconnecting said fluid control device from said accumulator means whereby the cushioning function will be discontinued for use in soft ground.

4. A track suspension apparatus for a vehicle having a frame, comprising:

a continuous flexible track;

a drive wheel operatively attached to said frame for engaging and driving said continuous flexible track;

a leading idler arm operatively pivotally attached to said frame;

a leading idler wheel in engagement with said track and rotatably mounted to one end of said leading idler arm;

a trailing idler arm operatively pivotally attached to said frame;

a trailing idler wheel in engagement with said track and rotatably mounted to one end of said trailing idler arm;

a mid-roller assembly in engagement with said track and operatively attached to one of said idler arms;

an interconnecting structure for holding said leading and trailing idler arms in a predetermined position;

cushioning means associated with said interconnecting structure for providing a shock absorbing function when said leading and trailing idler wheels move with respect to from each other due to pivoting of said idler arms when irregular surfaces are encountered by said track;

means for sensing the relative pivotal position of said leading and trailing swing arms; and

means associated with said sensing means for causing said swing arms to return to said predetermined position after having moved from said predetermined position due to performing a shock absorbing function.

5. A track suspension apparatus for a vehicle having a frame, comprising:

a continuous flexible track;

a drive wheel operatively attached to said frame for engaging and driving said continuous flexible track;

a leading idler arm operatively pivotally attached to said frame;

a leading idler wheel in engagement with said track and rotatably mounted to one end of said leading idler arm;

a trailing idler arm operatively pivotally attached to said frame;

a trailing idler wheel in engagement with said track and rotatably mounted to one end of said trailing idler arm;

a mid-roller assembly in engagement with said track and operatively attached to one of said idler arms;

an interconnecting structure for holding said leading and trailing idler arms in a predetermined position; and

means for operably releasing said interconnecting structure whereby said idler arms can freely pivot, thereby causing the lower part of said track to be supported only by said mid-roller assembly whereby a shorter support surface on the bottom of said track will facilitate easier turning.

6. A track suspension apparatus for a vehicle having a frame, comprising:

a continuous flexible track;

a drive wheel operatively attached to said frame for engaging and driving said continuous flexible track;

a leading idler arm operably pivotally attached to said frame;

a leading idler wheel in engagement with said track and

rotatably mounted to one end of said leading idler arm;

a trailing idler arm operably pivotally attached to said frame;

a trailing idler wheel in engagement with said track and rotatably mounted to one end of said trailing idler arm;

a mid-roller assembly in engagement with said track and operatively attached to one of said idler arms;

an interconnecting structure for holding said leading and trailing idler arms in a predetermined position; and

wherein said drive wheel extends below a top portion of said mid-roller assembly.

7. The apparatus of claim **6** wherein said mid-roller assembly includes a plurality of rollers on both sides of said drive wheel.

8. The apparatus of claim **7** wherein said mid-roller assembly is also operatively attached to the other one of said idler arms.

9. The apparatus of claim **8** wherein said mid-roller assembly is pivotally attached to one of said idler arms at one end thereof.

10. The apparatus of claim **9** wherein said mid-roller assembly is operably pivotally attached at the other end thereof to the other one of said idler arms.

11. The apparatus of claim **9** wherein a link member is operatively pivotally attached at one end thereof to the other end of said mid-roller assembly and is operatively pivotally attached at the other end thereof to the other one of said idler arms thereby allowing said leading and trailing idler wheels to move toward or away from each other while said mid-roller assembly supports a lower part of said track.

12. The apparatus of claim **6** wherein said drive wheel is at least one and one half times as large in diameter as the diameter of said leading idler wheel.

13. The apparatus of claim **6** wherein said drive wheel is at least one and one half times as large in diameter as the diameter of said trailing idler wheel.

14. The apparatus of claim **13** wherein said continuous flexible track has lugs disposed around the center and inner periphery thereof, said lugs being spaced from the outer edges of said track and wherein said drive wheel is substantially only as wide as the lugs on said flexible track.

15. A track suspension apparatus for a vehicle having a frame, comprising:

a continuous flexible track;

a drive wheel operatively attached to said frame for engaging and driving said continuous flexible track;

a leading idler arm operably pivotally attached to said frame;

a leading idler wheel in engagement with said track and rotatably mounted to one end of said leading idler arm;

a trailing idler arm operably pivotally attached to said frame;

a trailing idler wheel in engagement with said track and rotatably mounted to one end of said trailing idler arm;

a mid-roller assembly in engagement with said track and operatively attached to one of said idler arms;

an interconnecting structure for holding said leading and trailing idler arms in a predetermined position;

a second mid-roller assembly operatively attached to the other one of said idler arms; and

wherein the first said mid-roller assembly is pivotally attached to said leading idler arm and said second mid-roller assembly is pivotally attached to said trailing idler arm.

16. A track suspension apparatus for a vehicle having a frame, comprising:

a continuous flexible track having a width and lugs disposed on the inner center portion of said track which have a length which is substantially shorter than the width of said track;

a drive wheel operatively attached to said frame for engaging and driving said continuous flexible track, said drive wheel being substantially the same width as the length of said lugs;

a leading idler arm operably pivotally attached to said frame;

a leading idler wheel in engagement with said track and rotatably mounted to one end of said leading idler arm;

a trailing idler arm operably pivotally attached to said frame;

a trailing idler wheel in engagement with said track and rotatably mounted to on end of said trailing idler arm;

a mid-roller assembly in engagement with said track and operatively attached to one of said idler arms; and

an interconnecting structure for holding said leading and trailing idler arms in a predetermined position.

ADDED CLAIMS:

17. A track apparatus for a vehicle having a frame, comprising:

-a continuous flexible track having an upper length and a ground-engaging lower length, the upper and lower lengths defining a vertical dimension therebetween;

-a drive wheel attached to the frame and having upper and lower circumferential portions and a diameter spanning a majority of the vertical dimension, the upper circumferential portion engaging the upper track length and the lower circumferential portion spaced above the lower track length;

-a leading idler assembly attached to the frame and having a leading idler arm and a leading idler wheel engaging the track and rotatably mounted to the distal end of the leading idler arm;

-a trailing idler assembly attached to the frame and having a trailing idler arm and a trailing idler wheel engaging the track and rotatably mounted to the distal end of the trailing idler arm; and

-a mid-roller assembly in engagement with the track lower length and attached to one of the idler arms.

18. The track apparatus of claim 17 wherein the drive wheel diameter is at least one and a half times the diameter of the leading idler wheel.

19. The track apparatus of claim 17 wherein the drive wheel diameter is at least one and a half times the diameter of the trailing idler wheel.

20. The track apparatus of claim 17 wherein the space between the lower circumferential portion of the drive wheel and the lower track length is less than half the diameter of the drive wheel.

21. The track apparatus of claim 17 wherein the mid-roller assembly includes at least one mid-roller and the space between the lower circumferential portion of the drive wheel and the lower track length is less than the diameter of the mid-roller.

22. The track apparatus of claim 21 wherein the mid-roller assembly includes at least two axially-offset mid-rollers, including at least one on either side of the drive wheel.

23. The track apparatus of claim 22 wherein the mid-roller assembly includes a plurality of mid-rollers on both sides of the drive wheel.

24. The track apparatus of claim 17 wherein the mid-roller assembly includes at least one mid-roller and the drive wheel extends below the top level of the mid-roller.

25. The track apparatus of claim 24 wherein the mid-roller assembly includes at least two axially-offset mid-rollers, including at least one on either side of the drive wheel.

26. The track apparatus of claim 25 wherein the mid-roller assembly includes a plurality of mid-rollers on both sides of the drive wheel.

DECLARATION OF SMALL BUSINESS CONCERN
CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) AND 1.27(c))

I declare that I am an official of, and empowered to act on behalf of, the following small business concern:

AgTracks, Inc.
204A Main Street
~~Verona~~ Mt. Vernon, Indiana 47620

KJ 7-24-97

I declare that the above-identified business concern qualifies as a small business concern as defined in 37 CFR 1.9(d) for purposes of paying reduced fees under 35 USC 41(a) and (b), in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. I understand that for purposes of this statement: (1) the number of employees is the average, over the previous fiscal year of the concern, of the number so full-time, part-time and temporary employees of such concern during each of the pay periods of the fiscal year; and (2) concerns are considered affiliates of each other either when one concern controls or has the power to control the other (directly or indirectly), or when a third party (or third parties) controls or has the power to control both (directly or indirectly).

I declare that exclusive rights under contract law have been conveyed to and remain with the small business concern identified above with regard to the invention described in the following patent application:

TITLE: TRACK SYSTEM FOR VEHICLES

INVENTOR: Gary L. Kelderman

I acknowledge the duty to file, in this application or the resulting patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate.

I hereby declare: that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true; that such statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 USC 1001; and that willful false statements may jeopardize the validity of the application or any patent issued thereon.

By Kenneth Juncker PRESIDENT Date 7-24-97
Kenneth Juncker
President

Attorney Docket No. AG-101RE

INVENTOR'S DECLARATION
FOR REISSUE PATENT APPLICATION

I, Gary L. Kelderman, of 2674 Hwy. 92, Oskaloosa, Iowa 52577, hereby declare:

That I am a United States citizen and inventor on Patent No. 5,452,949 ("the '949 patent");

That, on May 2, 1997 I assigned the '949 patent to AgTracks, Inc. ("AgTracks"), 204A Main Street, Mt. Vernon, Indiana 47620, and that AgTracks is owner of the '949 patent;

That I am the original, first and sole inventor of the subject matter described and claimed in the attached reissue patent application entitled TRACK SYSTEM FOR VEHICLES;

That I have reviewed and understand the contents of the attached reissue patent application, including the claims;

That I verily believe the original '949 patent subject to this reissue application to be partly inoperative by virtue of the fact that less was claimed therein than rightfully could have been claimed;

That, more specifically, certain original claims were insufficient in their recitation or over-emphasis of "interconnecting structure" and too little emphasis on the uniqueness, in a vehicle track apparatus of the kind with a track, a drive wheel, leading and trailing idler assemblies and a mid-roller assembly, of (1) a drive wheel which has a diameter spanning a majority of the vertical dimension of the track loop with an upper circumferential portion engaging the upper track length and a lower circumferential portion spaced above the lower track length, and most preferably spanning a large majority of the vertical dimension of the track, and (2) the drive wheel being of sufficient size such that axially-offset mid-rollers are on either side of the drive wheel;

That the newly-presented independant and dependent claims differ from the claims of the original patent to the extent that independent claim 17, while narrower than, e.g., original claim 6 in its description of the drive wheel, is broader than such claim in describing the relationship of the leading and trailing idler assemblies;

That I made a full disclosure of the invention upon my original filing thereof; and

That the aforementioned error occurred by failure to include in the range of claims certain claims of the scope of the claims now added, that such error was discovered in April 1997 upon review of the '949 patent by or for AgTracks and related discussions with AgTracks and its patent counsel in connection with the transfer of such assets, and that the aforementioned error arose without any deceptive intention.

I acknowledge the duty to disclose information which is material to the examination of this reissue application in accordance with 37 CFR §1.56(a) and §1.175(7).

I further declare that all statements made herein of my own knowledge are true, that all statements made on information and belief are believed to be true, that these statements were made with the knowledge that willful false statements or the like so made are punishable by fine or imprisonment, or both, under 18 USC §1001, and that willful false statements may jeopardize the validity of this application or any patent issued thereon.

Gary L. Kelderman

Date 7-24-97

PATENT OWNER'S DECLARATION
FOR REISSUE PATENT APPLICATION

I, Kenneth Juncker, President of AgTracks, Inc. ("AgTracks"), 204A Main Street, Mt. Vernon, Indiana 47620, acting for AgTracks, hereby declare:

That AgTracks is owner, by assignment, of Patent No. 5,452,949 ("the '949 patent"), having acquired the '949 patent from Gary L. Kelderman pursuant to an Assignment dated May 2, 1997 (copy attached) which was mailed to the Patent & Trademark Office ("PTO") on May 14, 1997 for recording;

That, on information and belief, the original, first and sole inventor of the subject matter described and claimed in the attached reissue patent application entitled TRACK SYSTEM FOR VEHICLES is:

Gary L. Kelderman (a United States citizen)
2674 Hwy. 92
Oskaloosa, Iowa 52577,

and that I have reviewed and understand the contents of the attached reissue patent application, including the claims;

That I verily believe the original '949 patent subject to this reissue application to be partly inoperative by virtue of the fact that less was claimed therein than rightfully could have been claimed;

That, more specifically, certain original claims were insufficient in their recitation or over-emphasis of "interconnecting structure" and too little emphasis on the uniqueness, in a vehicle track apparatus of the kind with a track, a drive wheel, leading and trailing idler assemblies and a mid-roller assembly, of (1) a drive wheel which has a diameter spanning a majority of the vertical dimension of the track loop with an upper circumferential portion engaging the upper track length and a lower circumferential portion spaced above the lower track length, and most preferably spanning a large majority of the vertical dimension of the track, and (2) the drive wheel being of sufficient size such that axially-offset mid-rollers are on either side of the drive wheel;

That the newly-presented independent and dependent claims differ from the claims of the original patent to the extent that independent claim 17, while narrower than, e.g., original claim 6 in its description of the drive wheel, is broader than such claim in describing the relationship of the leading and trailing idler assemblies;

That Mr. Kelderman made a full disclosure of the invention upon original filing. That, on information and belief, the aforementioned error occurred by failure to include in the range of claims certain claims of the scope of the claims now added, and that such error was discovered in April 1997 upon review of the '949 patent by AgTracks and its patent counsel

and related discussions with Mr. Kelderman in connection with the transfer of such assets; and

That, on information and belief, the aforementioned error arose without any deceptive intention on the part of Mr. Kelderman.

I acknowledge the duty to disclose information which is material to the examination of this reissue application in accordance with 37 CFR §1.56(a) and §1.175(7).

I hereby appoint the following attorneys to prosecute this reissue application and to transact all business in the PTO connected therewith:

Names: Peter N. Jansson (Registration No. ~~26,185~~)
Larry L. Shupe (Registration No. ~~29,589~~)
Elisabeth T. Bridge (Registration No. ~~37,523~~)
John E. Munger (Registration No. ~~37,685~~)

Address: Jansson & Shupe, Ltd.
245 Main Street, Suite M
Racine, WI 53403

Telephone: 414/632-6900.

Kindly direct telephone calls to Peter N. Jansson at the above telephone number.

I further declare that all statements made herein of my own knowledge are true, that all statements made on information and belief are believed to be true, that these statements were made with the knowledge that willful false statements or the like so made are punishable by fine or imprisonment, or both, under 18 USC §1001, and that willful false statements may jeopardize the validity of this application or any patent issued thereon.

AgTracks, assignee of the original patent, consents to the above-referenced reissue patent application pursuant to 37 CFR §1.172 and offers to surrender the original patent.

AGTRACKS, INC.

By Kenneth Juncker PRESIDENT
Kenneth Juncker, President

Date 7-24-97

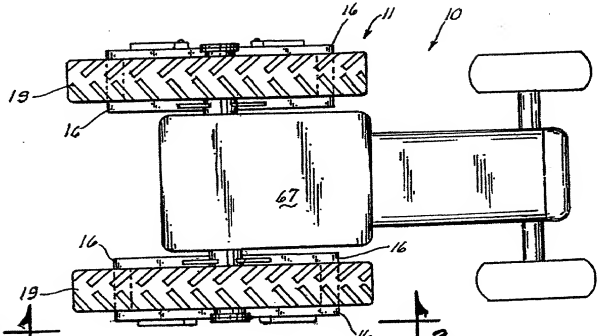

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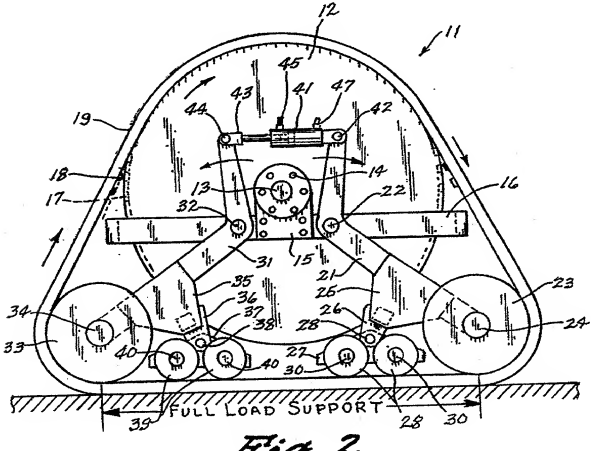
Fig. 1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FULL LOAD SUPPORT
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Fig. 2

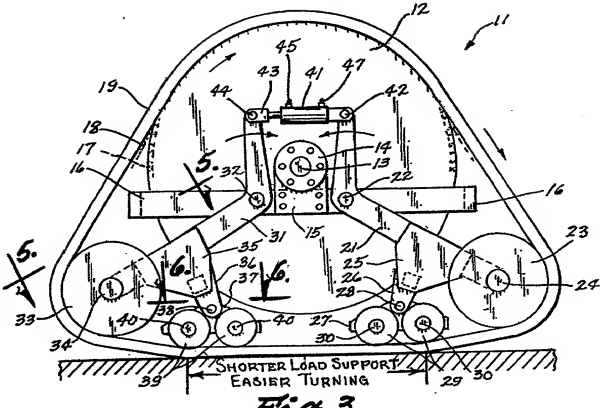
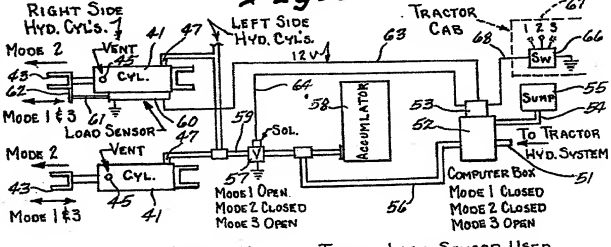


Fig. 3



MODE 1: AUTOMATIC CUSHION HIGHWAY TRAVEL ~ LOAD SENSOR USED
MODE 2: CYLINDERS LOCKED, NO CUSHIONING ~ USED ON SOFT GROUND
MODE 3: IDLER WHEELS RAISED ~ EASIER TURNING ~ MIDDLE ROLLERS TAKING LOAD

Fig. 4

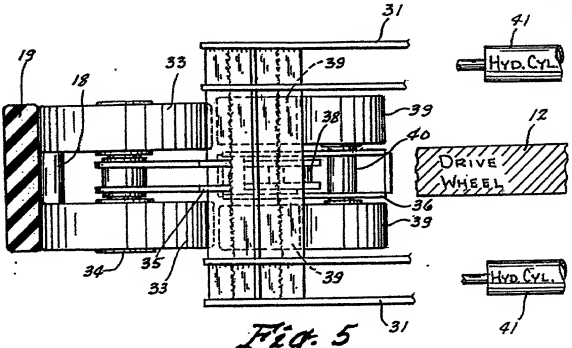


Fig. 5

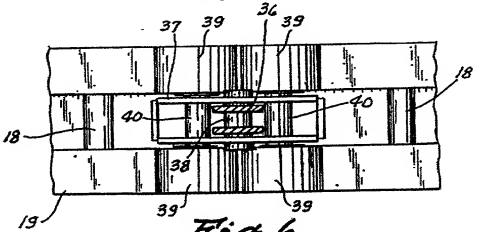


Fig. 6

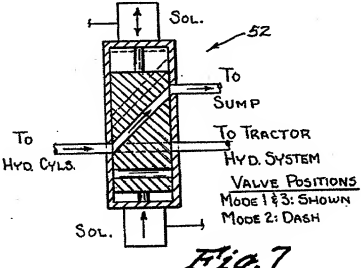


Fig. 7

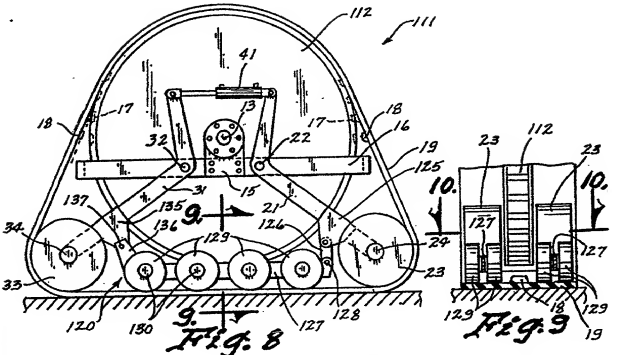


Fig. 8

Fig. 9

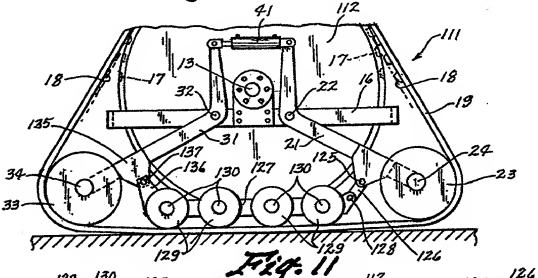


Fig. 11

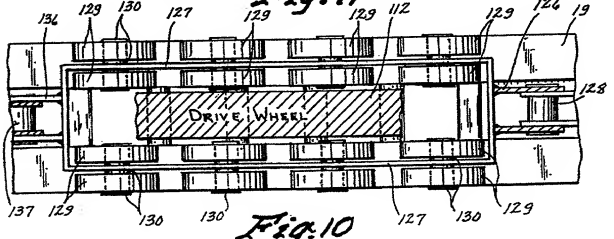


Fig. 10